GLOSSARY

Section I

Abbreviations

A
Amperes

ac
Alternating current

AWG
American Wire Gage

C4ISR
Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance

C
Centigrade

CAA
Controlled Access Area

CBEA
Controlled BLACK Equipment Area

C-E
Communications Equipment

cm
Centimeter

cmil
Circular mils

dB
Decibel

dc
Direct current

DO
Design objective

EG
Engine generator

EM
Electromagnetic

EMC
Electromagnetic Compatibility

EMI
Electromagnetic Interference

EMP
Electromagnetic Pulse

EMT
Electrical metallic tubing

F
Fahrenheit

ft
Feet

GFCI
Ground Fault Circuit Interrupter

GHz
Gigahertz

HVAC
Heating, Ventilating, and Air Conditioning

Hz
Hertz

IDF
Intermediate Distribution Frame

IEEE
Institute of Electrical and Electronics Engineers

in
Inch

I/O
Input/Output

kcmil
One-thousand circular mils

kg
Kilogram

kHz
Kilohertz

kV
Kilo Volt

kVA
Kilo Volt Amperes

kW
Kilo Watts

LEA
Limited Exclusion Area

m
Meter

MHz
Megahertz

mm
Millimeter

MOV
Metal Oxide Varistor

MOS
Metal oxide semiconductor

MVA
Mega Volt Amperes

NEC
National Electrical Code

NFPA
National Fire Protection Association

PA
Public Address

PBX
Private Branch Exchange

PIV
Peak Inverse Voltage

psi
Pounds per square inch

R
Resistance

RF
Radio Frequency

RFI
Radio Frequency Interference

S
Second

TM
Technical Manuals

TPD
Terminal Protection Devices

TSD
Transient Suppression Devices

TREE
Transient radiation effects on electronics

UL
Underwriters' Laboratories

UPS
Uninterruptible Power Supply

VRMS
Volts root-mean-square

ZNR
Zinc Oxide Non-Linear Resistor

Section II

Terms

Absorption Loss
The attenuation of an electromagnetic wave as it passes through a shield. This loss is primarily due to induced currents and the associated I^2R loss.

Air Terminal
The lightning rod or conductor placed on or above a building, structure, tower, or external conductors for the purpose of intercepting lightning.

Aperture
An opening in a shield through which electromagnetic energy passes.

Balanced Line
A line or circuit using two conductors instead of one conductor and ground (common conductor). The two sides of the line are symmetrical with respect to ground. Line potentials to ground and line currents are equal but have opposite phase at corresponding points along the line.

Bond
The electrical connection between two metallic surfaces established to provide a low resistance path between them.

Bond, Direct
An electrical connection utilizing continuous metal-to-metal contact between the members being joined.

Bond, Indirect
An electrical connection employing an intermediate electrical conductor or jumper between the bonded members.

Bond, Permanent
A bond not expected to require disassembly for operational or maintenance purposes.

Bond, Semi-permanent
Bonds expected to require periodic disassembly for maintenance, or system modification, and that can be reassembled to continue to provide a low resistance interconnection.

Bonding
The process of establishing the required degree of electrical continuity between the conductive surfaces of members to be joined.

Building
The fixed or transportable structure that houses personnel and equipment and provides the degree of environmental protection required for reliable performance of the equipment housed within.

Cabinet
A protection housing or covering for two or more units or pieces of equipment. A cabinet may consist of an enclosed rack with hinged doors.

Case
A protective housing for a unit or piece of electrical or electronic equipment.

Chassis
The metal structure that supports the electrical components which make up the unit or system.

Circular Mil
A unit of area equal to the area of a circle whose diameter is one mil (1 mil = 0.001-6 inch). A circular mil is equal to or 78.54 percent of a square mil (1 square mil = 10 square inch). The area of a circle in circular mils is equal to the square of its diameter in mils.

Circuit
An electronic closed-loop path between two or more points used for signal transfer.

Common-Mode Voltage
That amount of voltage common to both input terminals of a device.

Common-Mode Rejection
The ability of a device to reject a signal which is common to both its input terminals.

Conducted Interference
Undesired signals that enter or leave equipment along a conductive path.

Copper Clad Steel
Steel with a coating of copper bonded on it.

Coupling
Energy transfer between circuits, equipment, or systems.

Coupling, Conducted
Energy transfer through a conductor.

Coupling, Free-Space
Energy transfer via electromagnetic fields not in a conductor.

Cutoff Frequency
The frequency below which electromagnetic energy will not propagate in a waveguide.

Degradation
A decrease in the quality of a desired signal (i.e., decrease in the signal-to-noise ratio or an increase in distortion), or an undesired change in the operational performance of equipment as the result of interference.

Down Conductor, Lightning
The conductor connecting the air terminal or overhead ground wire to the earth electrode subsystem.

Earth Electrode Subsystem
A network of electrically interconnected rods, plates, mats, or grids installed for the purpose of establishing a low resistance contact with earth.

Electric Field
A vector field about a charged body. Its strength at any point is the force that would be exerted on a unit positive charge at that point.

Electromagnetic Compatibility (EMC)
The capability of equipment or systems to be operated at their intended operational environment, within designed levels of efficiency, without causing or receiving degradation due to unintentional EMI. EMC is the result of an engineering planning process applied during the life cycle of equipment. The process involves careful consideration of frequency allocation, design, procurement, production, site selection, installation, operation, and maintenance.

Electromagnetic Interference (EMI)
Any electrical or electromagnetic phenomenon, manmade or natural, either radiated or conducted, that results in unintentional and undesirable responses from, or performance degradation or malfunction of, electronic equipment.

Electromagnetic Pulse (EMP)
A large impulsive type electromagnetic wave generated by nuclear or chemical explosions.

Equipment, Unit or Piece Of
An item having a complete function apart from being a component of a system.

Equipment Grounding
Attained by the grounding conductor of the fault protection subsystem, and/or bonding to the signal reference subsystem or the structural steel elements of the building.

Equipotential Plane
A grid, sheet, mass, or masses of conducting material which, when bonded together, offers a negligible impedance to current flow (serves as signal reference subsystem for new facilities).

Facility
A building or other structure, either fixed or transportable in nature, with its utilities, ground networks, and electrical supporting structures. All wiring, cabling as well as electrical and electronic equipment are also part of the facility.

Facility Ground System
The electrically interconnected system of conductors and conductive elements that provides multiple current paths to earth. The facility ground system includes the earth electrode subsystem, lightning protection subsystem, signal reference subsystem, fault protection subsystem, as well as the building structure, equipment racks, cabinets, conduit, junction boxes, raceways, duct work, pipes, and other normally noncurrent-carrying metal elements.

Far Field
The region of the field of an antenna where the radiation field predominates and where the angular field distribution is essentially independent of the distance from the antenna.

Fault
An unintentional short-circuit, or partial short-circuit, (usually of a power circuit) between energized conductors or between an energized conductor and ground.

First Service Disconnect
The necessary equipment (circuit breakers, switches, fuses, etc.) located at the point of entrance of power conductors to a building or other structure.

Ground
The electrical connection to earth primarily through an earth electrode subsystem. This connection is extended throughout the facility via the facility ground system consisting of the signal reference subsystem, the fault protection subsystem, the lightning protection subsystem, and the earth electrode subsystem.

Grounded Conductor
(Neutral) The circuit conductor that is intentionally grounded (at first service disconnect or power source).

Grounding Conductor
(Green Wire) A conductor used to connect equipment or the grounded circuit of a power system to the earth electrode subsystem.

Higher Frequency Ground
The interconnected metallic network (equipotential plane) intended to serve as a common reference for currents and voltages at frequencies above 30 kHz and in some cases above 300 kHz. Pulse and digital signals with rise and fall times of less than 1 microsecond are classified as higher frequency signals.

Interface
Any electrical connection (encompassing power transfer, signaling, or control functions) between two or more equipments or systems.

Isokeraunic (or isoceraunic)
Showing equal frequency of thunderstorms.

Isolation
Physical and electrical arrangement of the parts of an equipment, system, or facility to prevent uncontrolled electrical contact within or between the parts.

Lightning Protection Subsystem
A complete subsystem consisting of air terminals, interconnecting conductors, ground terminals, arresters, and other connectors or fittings required to assure a lightning discharge will be safely conducted to earth.

Lower Frequency Ground
A dedicated, single-point network intended to serve as a reference for voltages and currents, whether signal, control, or power from dc to 30 kHz and in some cases to 300 kHz. Pulse and digital signals with rise and fall times greater than 1 microsecond are considered to be lower frequency signals.

Magnetic Field
A vector field produced by a continuous flow of charge.

Multipoint Ground
More than one path to ground.

National Electrical Code (NEC)
A standard governing the use of electrical wire, cable, and fixtures installed in buildings. It is sponsored by the National Fire Protection Association (NFPA-70) under the auspices of the American National Standards Institute (ANSI-CI).

Near Field
The region of the field immediately surrounding an antenna where the inductive and capacitive fields predominate. In this region the angular distribution of the field varies with distance from the antenna.

Neutral
The ac power system conductor that is intentionally grounded on the supply side of the first service disconnecting means. It is the low potential (white) side of a single-phase ac circuit or the low potential fourth wire of a three-phase wye distribution system. The neutral (grounded conductor) provides a current return path for ac power currents whereas the grounding (or green) conductor does not, except during fault conditions.

Penetration
The passage through a partition or wall of an equipment or enclosure by a wire, cable, or other conductive object.

Plane Wave
An electromagnetic wave that predominates in the far field region of an antenna, and with a wavefront which is essentially in a flat plane. In free space, the characteristic impedance of a plane wave is 377 ohms.

Rack
A vertical frame on which one or more units of equipment are mounted.

Radiation
The emission and propagation of electromagnetic energy through space.

Radiation Resistance
The resistance which, if inserted in place of an antenna, would consume the same amount of power that is radiated by the antenna.

Radio Frequency Interference (RFI)
RFI is manmade or natural, intentional or unintentional electromagnetic propagation that results in unintentional and undesirable responses from or perform ante degradation or malfunction of, electronic equipment.

Reflecting Loss
The portion of the transition loss, expressed in dB, that is due to the reflection of power at a barrier or shield. Reflection loss is determined by the magnitude of the wave impedance inside the barrier relative to the wave impedance in the propagation medium outside the barrier.

RF-Tight
Offering a high degree of electromagnetic shielding effectiveness.

Shield
A housing, screen, or cover which substantially reduces the coupling of electric and magnetic fields into or out of circuits or prevents the accidental contact of objects or persons with parts or components operating at hazardous voltage levels.

Shielding Effectiveness
A measure of the reduction or attenuation in the electromagnetic field strength at a point in space caused by the insertion of a shield between the source and that point.

Signal Reference Subsystem
A conductive sheet or cable network/mesh providing an equipotential reference for C-E equipment to minimize interference and noise.

Signal Return
A current-carrying path between a load and the signal source. It is the low side of the closed loop energy transfer circuit between a source-load pair.

Structure
Any fixed or transportable building, shelter, tower, or mast that is intended to house electrical or electronic equipment or otherwise support or function as an integral element of an electronics complex.

Supporting Structures, Electrical
Normally non-electrified conductive structural elements near to energized electrical conductors such that a reasonable possibility exists of accidental contact with the energized conductor. Examples are conduit and associated fittings, junction and switch boxes, cable trays, electrical/electronic equipment racks, electrical wiring cabinets, and metallic cable sheaths.

Transducer
A device which converts the energy of one transmission system into the energy of another transmission system.

Thunderstorm Day
A local calendar day on which thunder is heard.

Undesired Signal
Any signal which tends to produce degradation in the operation of equipment or systems.

Wave Impedance
The ratio of the electric field strength to the magnetic field strength at the point of observation.

Zone Of Protection
That space that is below and adjacent to a lightning protection subsystem that is substantially immune to direct lightning discharges.